DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

AS1GL
Revision 5
LOCKHEED MARTIN
(LORAL)
GZ-22
March 22, 2004

TYPE CERTIFICATE DATA SHEET NO. AS1GL

This data sheet, which is part of Type Certificate No. AS1GL, prescribes conditions and limitations under which the product for which the type certificate was issued meets the airworthiness requirements of the Federal Aviation Regulations.

Type Certificate Holder: Lockheed Martin Maritime Systems & Sensors - Akron
1210 Massillon Road
Akron, Ohio 44315-0001

Type Certificate Holder Record: Loral Defense Systems – Akron transferred TC AS1GL to Lockheed Martin Tactical Defense Systems on June 19, 1996

Lockheed Martin Tactical Defense Systems transferred TC AS1GL to Lockheed Martin Naval Electronics & Surveillance Systems - Akron on May 4, 2001

Lockheed Martin Naval Electronics & Surveillance Systems - Akron transferred TC AS1GL to Lockheed Martin Maritime Systems & Sensors - Akron on March 22, 2004

I - Model GZ-22 Airship, Approved August 31, 1989

Envelope:	Volume	247,800 cu. ft.
	Maximum Pressure	3.00 in. H_2O
	Minimum Pressure	1.00 in. H_2O

Lifting Gas: Helium gas. The airship is to be inflated with laboratory grade (99.9% purity) Helium gas only.

Engine: Two (2) Allison Gas Turbine Division of General Motors Corporation Model 250-B17C (Turbopropeller) (See NOTE 4).

Fuel: Jet A, Jet A-1, or Jet B conforming to ASTM D-1655; JP-4 or JP-5 conforming to MIL-T-5624L; JP-8 conforming to MIL-T-83133A (See NOTE 5 for other fuel information and limitations).

Oil: MIL-L-7808J or MIL-L-23699C

Engine Limits*:

	Shaft H.P.	Torque** lb.ft.	Gas Generator Speed, N_1	Power Turbine Speed, N_2	Measured Gas Temperature (Deg C)
Takeoff (5 min.)	369	955	105%	105%	810
Max. Continuous	314	812	105%	105%	738

100% N_1 = 50,970 r.p.m.
100% N_2 = 33,290 r.p.m. (corresponds to 2,030 propeller r.p.m.)
100% Torque = 955 lb.ft.

* See NOTE 6.
** Maximum continuous torque is limited to 50% (478 lb.ft.) at propeller speeds below 96% N_2, and to 85% (812 lb.ft.) at propeller speeds at or above 96% N_2. During reversing, engine torque is limited to 30% (287 lb.ft.).

Propeller and Propeller Limits: Two Hartzell three-bladed full-feathering, reversible propellers.
Hub Model No. HC-D3F-7
Blade Model No. D7023
Diameter: 70 in., No reduction permitted.
Pitch settings at 24.5 in. station:

Takeoff	26.1°
Maximum Power	30.8°
Maximum Reverse	-23.0°
Flight Idle	8.0°
Ground Idle	0.0°
Feather	77.0°

Airspeed Limits:

Design Maximum Level Flight Speed	62 m.p.h. CAS
Maximum Operating Limit Speed	62 m.p.h. CAS
Maximum Operating Limit Speed with camera extended	50 m.p.h. CAS
Maximum Landing Gear Operating Speed	62 m.p.h. CAS

C.G. Range: Not Applicable.

Datum: Theoretical bow of the envelope. The theoretical bow is 2.19 ft. aft of the centerline of the mooring pendant cable. All station measurements are shown in feet.

Maximum Weight:

Maximum airship weight	16,500 lb.
Maximum car weight	10,000 lb.
Maximum static heaviness at takeoff	2,000 lb.

Minimum Crew: 1 Pilot.

No. Seats: 10 (2 at +78.04, 2 at +82.93, 2 at +85.93, 2 at +88.93, 2 at +91.53)

Fuel Capacity: 450 gal. (432 gal. usable) (Two 225 gal. tanks)

Oil Capacity: 9 qt. per engine

Serial Nos. Eligible: 4120

Certification Basis: FAR 21.17(b) effective March 13, 1987.

Compliance with FAR 21.17(b) has been shown utilizing the provisions of Advisory Circular 21.17-1 dated September 30, 1987, Section 5. The airworthiness requirements met under this provision are the Airship Design Criteria (ADC), FAA P-8110-2, dated November 2, 1987, as amended by FAA letter dated January 10, 1989.

Application for Type Certificate dated February 29, 1984.

Type Certificate No. AS1GL issued August 31,1989.

Production Basis: Production Certificate No. 114.

Equipment: The basic required equipment as prescribed in the applicable airworthiness requirements (see Certification Basis) must be installed in the aircraft for certification.

In addition to the above required equipment, the following equipment is also required: FAA Approved Airship Flight Manual, ER3325-15, No Revision, dated September 1, 1989, or later FAA approved revision.

Maintenance and Inspection: Maintenance and Inspection of this airship must be carried out according to Lockheed Martin TDS Report ER3325-16, No Revision, dated September 1, 1989, and ER3325-17, No Revision, dated September 1, 1989, or later FAA approved revisions (See NOTE 7).

NOTE 1. Current weight and balance report together with list of equipment included in certificated empty weight, and loading instructions when necessary, must be provided for each aircraft at time of original certification. The certificated empty weight and corresponding center of gravity location must include unusable fuel of 27.9 lb. at (+95.83).

NOTE 2. All placards required in the approved airship flight manual must be installed in the appropriate locations.

NOTE 3. Reserved

NOTE 4. Allison Model 250-B17C engines installed on the GZ-22 airship are required to incorporate the following modifications (or later FAA approved equivalents):

(a) Gear Box Assembly (P/N 23051115) - Contains modifications to allow engine to operate throughout an engine pitch range from 30^{o} nose down to 75^{o} nose up.

(b) Pneumatic Overspeed Governor - Provides additional overspeed protection by reducing fuel flow to minimum if an overspeed is sensed at the accessory gearbox (Allison Commercial Engine Bulletin (CEB) 1204).

(c) Energy Absorbing Ring - Provides protection in the case of a first stage turbine wheel failure (CEB's 1212, 1213, and 1214).

(d) Beta Control/Coordinator Kit (P/N 23036659) - Provides more accurate propeller control during "Beta" operation for engines with Hartzell HC-D3F-7 propeller installed (Allison TP Installation Bulletin 1701).

NOTE 5. Emergency use of aviation gasoline MIL-G-5572, grades 115/145 and lower, is limited to amount of fuel required to operate the engine for not over 6 hours during an overhaul period except that a mixture consisting of 1/3 by volume of aviation gasoline MIL-G-5572 grade 80/87, and 2/3 by volume of MIL-T-5624, grade JP-5, or aviation turbine fuels ASTM-D1655 Jet A or A-1 or Allison Spec. EMS-64 may be used for unrestricted periods of time. Fuels containing Tri-Cresyl-Phosphate additives shall not be used. It is not necessary to purge the unused fuel from the system before refueling with different type fuels. No fuel control adjustment is required when switching these fuel types. Anti-icing additives conforming to MIL-I-27686 are approved for use in fuels in amounts not to exceed 0.15 percent by volume. Shell anti-static additive is approved for use at a concentration that will not exceed fuel conductivity of 300 picomhos per meter.

NOTE 6. Engine Type Certificate Data Sheet E10CE provides information on the engine manufacturer's type approved performance ratings as well as engine oil temperature and oil pressure limitations.

NOTE 7. This airship is owned and operated by Goodyear Tire and Rubber. Airship maintenance, in accordance with Lockheed Martin Reports ER3325-16 and ER3325-17, must be conducted by Goodyear personnel who travel with the airship and who are trained specialists in all disciplines required to maintain airship operations. Also, additional maintenance and technical support is to be contracted from Lockheed Martin to reinforce the activities of Goodyear field personnel (Reference FAA letter to Loral (now Lockheed Martin) dated September 1, 1989).

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